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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NOLAN, PETER D	
ART UNIT	**PAPER NUMBER**
3661	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,227	CHARLOT ET AL.	
	Examiner	**Art Unit**	
	Peter D. Nolan	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _1/19/2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-17_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-17_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _19 January 2009_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _1/19/2009_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

The amendment filed 1/19/2009 has been entered. Claims 1-17 remain pending in the application. The previous 35 USC 112 rejection of claim 4 has been withdrawn in light of Applicant's amendment to claim 4.

The replacement sheet for figure 1 filed 1/19/2009 has been accepted.

The objections to the specification have been withdrawn in light of Applicant's amendment to the specification.

Information Disclosure Statement

The information disclosure statement filed 1/19/2009 has been received and placed of record in the file.

Response to Arguments

Applicant's arguments, see "Applicant Arguments", filed 1/19/2009, with respect to the rejections of claims 1-17 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn and this action is NON-FINAL. However, upon further consideration, new grounds of rejection are included in this detailed action.

Claim Objections

Claim 13 is objected to because of the following informality: the "means for reversing the roles of said first and second servers" should be corrected to "means for inverting the roles of said first and second servers" previously presented in claim 12, or vice-versa.

Claim Rejections – 35 USC § 112

The following is a quotation of the sixth paragraph of 35 USC 112:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Claims 4, 9, 12-14, 16 are rejected under 35 USC 112, sixth paragraph, because each claim contains means plus function limitations that invoke 35 USC 112, sixth paragraph, but the written description fails to disclose the corresponding structure, material or acts for the claimed limitations. The limitations at issue are:

- Claim 4 - The “means for particularizing said augmentation data” in claim 4.
- Claim 9 - The “means for selecting a computer from said plurality of computers”.
- Claims 12, 13 - The “means for inverting the roles of said first and second servers".
- Claim 14 - The "broadcasting means".
- Claim 16 - The “routing and broadcasting means”.

Applicant is required to:

(a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or

(b) Amend the written description of the specification such that it expressly recites what structure, material, or acts perform the claimed function without introducing any new matter (35 U.S.C. 132(a)).

If applicant is of the opinion that the written description of the specification already implicitly or inherently discloses the corresponding structure, material, or acts so that one of ordinary skill in the art would recognize what structure, material, or acts perform the claimed function, applicant is required to clarify the record by either:

(a) Amending the written description of the specification such that it expressly recites the corresponding structure, material, or acts for performing the claimed function and clearly links or associates the structure, material, or acts to the claimed function, without introducing any new matter (35 U.S.C. 132(a)); or

(b) Stating on the record what the corresponding structure, material, or acts, which are implicitly or inherently set forth in the written description of the specification, perform the claimed function. For more information, see 37 CFR 1.75(d) and MPEP §§ 608.01(o) and 2181.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 8, 14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (G. Crosby, W. Ely, K. McPherson, J. Stewart, D. Kraus, T. Cashin, K. Bean, B. Elrod, "A Ground-Based Regional Augmentation System (GRAS) - The Australian Proposal," Presented at ION GPS2000, Salt Lake City, UT, 2000) in view of Murphy (US 5786773) and Lo et al. (S.C. Lo, D. Akos, S. Houck, P.L. Normark, P.

Enge, “WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel,” Presented at the IEEE Position Location and Navigation Symposium, Palm Springs, CA, 2002).

3. **Regarding claim 1**, Crosby teaches a data server used in a system for supplying complementary augmentation data for satellite navigation user signals (**see Crosby Abstract teaching a Ground-based Regional Augmentation system (GRAS) delivers Space Based Augmentation System (SBAS) type messages to a network of GRAS VHF Stations which transmit the data to the end users. The GRAS VHF Stations act as servers in that they deliver the data to the end users**), said system including at least one computer for determining said augmentation data (**see Crosby figure 1, GRAS Master Station which determines GPS corrections**) which is determined from data transmitted by at least one receiver station receiving navigation information sent by at least one satellite (**see Crosby figure 1 where the GRAS Master Station process data from GRAS Reference Stations which receive GPS data from the GPS Constellation**), said server comprising: a first input for receiving said augmentation data transmitted by said computer (**see Crosby figure 1 where the GRAS VHF stations receive augmentation messages from the GRAS Master Station**); a first output for sending said augmentation data to at least one user (**see Crosby figure 1 where the GRAS VHF stations transmit the augmentation data to the end users**).

4. However, Crosby does not teach where the server further comprises a second output for retransmitting said augmentation data to said computer with a predetermined time-delay relative to reception at said first input.

5. Murphy teaches where a feedback loop may be implemented in a system for providing augmentation data to users wherein the augmentation data is retransmitted to the computer through a feedback loop (**see Murphy figures 1, 2 and 3. See also column 5, line 66 thru column 6, line 7; column 7, lines 26-38; and column 8, lines 28-38**). Although the feedback loop in Murphy is implemented using the same output that transmits to the users, and not a second output as claimed by applicant, the result is functionally equivalent in that the transmission is fed back to the ground station so that the ground station can monitor its broadcasts.

6. Lo teaches where differences in latency between augmentation systems can result in differences in the end user's calculation of the vertical protection level (VPL) which indicates the availability, integrity and accuracy of the augmentation signal (**see Lo figures 5, 6; page 331, column 1, paragraph 1 and page 331, column 2, paragraph 3**).

7. It would be obvious to one skilled in the art to modify Crosby to include the feedback loop in Murphy because this allows the system in Crosby to monitor the integrity of its transmissions (**see Murphy column 7, lines 34-38**). It would further be obvious to one skilled in the art to add a predetermined time delay to the transmission of augmentation data in Crosby, as modified by Murphy, because this would reduce the differences in the VPL calculated by an end user transitioning from a region covered by

a satellite based augmentation system to a region covered by a ground based augmentation system. If the predetermined time delay is introduced in the transmission of augmentation data to the end user, it follows that the transmission of the feedback data is also delayed by the same amount since the feedback uses the same transmission path.

8. **Regarding claim 2**, Crosby, as modified by Murphy in view of Lo in claim 1, teaches where the server has an output for retransmitting at least part of said augmentation data to said computer at the same time as sending said augmentation data to the user via said first output (**see the rejection of claim 1 above. The retransmission of the data in Murphy occurs at the same time as it is transmitted to the users**).

9. Although the above combination of Crosby, Murphy, and Lo does not teach where the server comprises a third output for retransmitting the augmentation data to the computer, the output in Crosby, Murphy and Lo is functionally equivalent in that it transmits the augmentation back to the computer at the same time it is transmitted to the users.

10. **Regarding claim 8**, Crosby teaches a system for supplying complementary augmentation data for satellite navigation user signals (**see Crosby Abstract teaching a Ground-based Regional Augmentation System (GRAS) that delivers Space Based Augmentation System (SBAS) type messages to a network of GRAS VHF Stations which transmit the data to the end users**), said system comprising: at least one computer for determining said augmentation data (**see Crosby figure 1, GRAS**

Master Station which determines GPS corrections), from data transmitted by at least one receiver station receiving navigation information sent by at least one satellite (**see Crosby figure 1 where the GRAS Master Station processes data from GRAS Reference Stations which receive GPS data from the GPS constellation**), and at least one data server (**see Crosby figure 1, GRAS VHF stations**) comprising: a first input for receiving said augmentation data transmitted by said at least one computer (**see Crosby figure 1 where the GRAS VHF stations receive augmentation messages from the GRAS Master Station**); a first output for sending said augmentation data to at least one user (**see Crosby figure 1 where the GRAS VHF stations transmit the augmentation data to the end users**).

11. However, Crosby does not teach where the server further comprises a second output for retransmitting the augmentation data to the computer with a predetermined time delay relative to reception at said first input.

12. Murphy teaches where a feedback loop may be implemented in a system for providing augmentation data to users wherein the augmentation data is retransmitted to the computer through a feedback loop (**see Murphy figures 1, 2 and 3. See also column 5, line 66 thru column 6, line 7; column 7, lines 26-38; and column 8, lines 28-38**). Although the feedback loop in Murphy is implemented using the same output that transmits to the users, and not a second output as claimed by applicant, the result is functionally equivalent in that the transmission is fed back to the ground station so that the ground station can monitor its broadcasts.

13. Lo teaches where differences in latency between augmentation systems can result in differences in the end user's calculation of the vertical protection level (VPL) which indicates the availability, integrity and accuracy of the augmentation signal (**see Lo figures 5, 6; page 331, column 1, paragraph 1 and page 331, column 2, paragraph 3**).

14. It would be obvious to one skilled in the art to modify Crosby to include the feedback loop in Murphy because this allows the system in Crosby to monitor the integrity of its transmissions (**see Murphy column 7, lines 34-38**). It would further be obvious to one skilled in the art to add a predetermined time delay to the transmission of augmentation data in Crosby, as modified by Murphy, because this would reduce the differences in the VPL calculated by an end user transitioning from a region covered by a satellite based augmentation system to a region covered by a ground based augmentation system. If the predetermined time delay is introduced in the transmission of augmentation data to the end user, it follows that the transmission of the feedback data is also delayed by the same amount since the feedback uses the same transmission path.

15. **Regarding claim 14**, Crosby, as modified by Murphy and Lo in claim 8, teaches where the system comprises broadcasting means connected to said first output of said server to broadcast said augmentation data to the users (**see Crosby figure 1, GRAS VHF Stations**).

16. **Regarding claim 17**, Crosby, as modified by Murphy and Lo in claim 8, teaches where the system comprises a plurality of augmentation data servers (**see Crosby**

figure 1 showing where the GRAS augmentation system contains multiple GRAS VHF Stations).

17. Claims 3, 4, 6, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (G. Crosby, W. Ely, K. McPherson, J. Stewart, D. Kraus, T. Cashin, K. Bean, B. Elrod, "A Ground-Based Regional Augmentation System (GRAS) - The Australian Proposal," Presented at ION GPS2000, Salt Lake City, UT, 2000) in view of Murphy (US 5786773) and Lo et al. (S.C. Lo, D. Akos, S. Houck, P.L. Normark, P. Enge, “WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel,” Presented at the IEEE Position Location and Navigation Symposium, Palm Springs, CA, 2002) and further in view of Eschenbach (US 6529830 B1).

18. **Regarding claim 3**, Crosby, as modified by Murphy and Lo in claim 1, does not teach where the server includes a second input for receiving information data coming from at least one user (**Crosby and Murphy both teach a one way broadcasting system through the GRAS VHF Stations**).

19. Eschenbach teaches where a server for providing augmentation data includes an input for receiving information data coming from at least one user (**see Eschenbach figure 9, system 900. See also column 16, lines 59-67 and column 17, lines 1-14 where it is taught that a user can request pseudo range corrections for a given location from a server**).

20. It would be obvious to one skilled in the art to add the input in Eschenbach to the server in Crosby, as modified by Murphy and Lo in claim 1, because this extends the range of the augmentation system by allowing access by a GPS receiver having internet

access (**see Eschenbach column 17, lines 3-14**) and not just those GPS receivers that have VHF receivers.

21. **Regarding claim 4**, Crosby, as modified by Murphy and Lo in claim 1, and further modified by Eschenbach in claim 3, teaches where the server includes means for particularizing said augmentation data sent via said first output as a function of said information data coming from at least one user (**see the rejection of claim 3 above where the pseudo range corrections may be given for a given location**).

22. **Regarding claim 6**, Crosby, as modified by Murphy and Lo in claim 1, does not teach where the server is assigned a virtual receiver station number.

23. Eschenbach teaches where a server may be assigned a virtual receiver station number (**see Eschenbach column 7, line 61 thru column 8, line 17**).

24. It would be obvious to one skilled in the art to modify Crosby, in view of Murphy and Lo in claim 1, so that the server is assigned a virtual receiver station number because this allows the server to generate pseudorange corrections that would be generated by a reference station at the server's location (**see Eschenbach column 8, lines 27-31**).

25. **Regarding claim 15**, Crosby, as modified by Murphy and Lo in claim 8, does not teach where the broadcasting means consist of the Internet.

26. Eschenbach teaches where an augmentation system may use the internet to broadcast augmentation data to users (**see Eschenbach figure 9 and column 16, lines 15-22**).

27. It would be obvious to one skilled in the art to modify the system in Crosby, in view of Murphy and Lo in claim 8, to use the internet to broadcast the augmentation data to users, as taught in Eschenbach, because the internet is an existing worldwide high speed network that uses standard transmission protocols. The modified system would thusly provide greater coverage than other networks such as wireless broadcast networks or dedicated terrestrial networks.

28. Claims 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (G. Crosby, W. Ely, K. McPherson, J. Stewart, D. Kraus, T. Cashin, K. Bean, B. Elrod, "A Ground-Based Regional Augmentation System (GRAS) - The Australian Proposal," Presented at ION GPS2000, Salt Lake City, UT, 2000) in view of Murphy (US 5786773) and Lo et al. (S.C. Lo, D. Akos, S. Houck, P.L. Normark, P. Enge, “WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel,” Presented at the IEEE Position Location and Navigation Symposium, Palm Springs, CA, 2002) and further in view of Walter et al. (T. Walter, C. Kee, Y.C. Chao, Y.J. Tsai, U. Peled, J. Ceva, A.K. Barrows, E. Abbott, D. Powell, P. Enge, and B. Parkinson, “Flight Trials of the Wide-Area Augmentation System (WAAS)," Proceedings of the Annual Meeting of the Satellite Division of the Institute of Navigation (ION GPS-94), 1994).

29. **Regarding claim 5**, Crosby, as modified by Murphy and Lo in claim 1, does not teach where the server is assigned an available geostationary satellite identification number (**Crosby on page 2, column 2 indicates that the augmentation messages**

may be transmitted to a user in an Satellite Based Augmentation System (SBAS) format but does not explicitly indicate the type of SBAS message).

30. Walter teaches where a data server in a system for providing augmentation data may be assigned an available geostationary satellite identification number (**see Walter page 2, column 2 and page 5, column 2 describing a land based Wide Area Augmentation System (WAAS) testbed which transmits WAAS SBAS messages in the RTCA SC 159 format, which includes a PRN mask assignment**).

31. It would be obvious to one skilled in the art to assign the data server in Crosby, in view of Walter and Lo in claim 1, an available geostationary satellite identification number, as taught in Walter, because the system in Crosby may transmit messages in an SBAS format (**see Crosby page 2, column 2**) and the use of an available PRN mask will allow the system in Crosby to transmit messages in the RTCA SC 159 format and distinguish the messages from those transmitted from other augmentation systems such as WAAS.

32. **Regarding claim 7**, Crosby, as modified by Murphy and Lo in claim 1, teaches where the augmentation data is determined from data transmitted by a plurality of receiver stations (**see Crosby figure 1 and the section "GRAS TEST BED DESCRIPTION" starting on page 2 where the GRAS Master Station receives data from a network of GRAS Reference Stations**)

33. However, Crosby, as modified by Murphy and Lo in claim 1, does not teach where the server comprises a third input for receiving data transmitted by one of said receiver stations.

34. Walter teaches where a data server in a system for providing augmentation data may comprise an input for receiving data transmitted by a receiver station (**see Walter page 2, column 2 and page 5, column 2 describing a land based Wide Area Augmentation System (WAAS) testbed which transmits WAAS SBAS messages. See also Walter page 7, column 1 where it is taught that a reference station is co-located with the WAAS Master Station and the measurements from the station were used to check the accuracy of the broadcast corrections**).

35. It would be obvious to one skilled in the art to modify Crosby, in view of Murphy and Lo in claim 1, so that the server receives data transmitted by a receiver station, as taught in Walter, because this allows the accuracy of the generated augmentation data to be verified (**see Walter page 7, column 1**).

36. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (G. Crosby, W. Ely, K. McPherson, J. Stewart, D. Kraus, T. Cashin, K. Bean, B. Elrod, "A Ground-Based Regional Augmentation System (GRAS) - The Australian Proposal," Presented at ION GPS2000, Salt Lake City, UT, 2000) in view of Murphy (US 5786773) and Lo et al. (S.C. Lo, D. Akos, S. Houck, P.L. Normark, P. Enge, “WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel,” Presented at the IEEE Position Location and Navigation Symposium, Palm Springs, CA, 2002) and further in view of Applicant’s admitted prior art and Ballard (US 6078960).

37. **Regarding claim 9**, Crosby, as modified by Murphy and Lo in claim 8, does not teach where the system comprises a plurality of computers for determining said

augmentation data; wherein said augmentation data server comprises means for selecting a computer from said plurality of computers wherein said second output retransmits said augmentation data received from said selected computer to said plurality of computers with a predetermined time-delay relative to the reception of said augmentation data.

38. As admitted in applicant's discussion of the prior art, the EGNOS system uses multiple Central Process Facility computers for redundancy (**see Specification page 1, lines 27-32**).

39. Ballard teaches a client server network where the client selects a server from a plurality of servers (**see Ballard figure 6, client side load balancing. See further column 6, lines 31-65 where the client computer requests data over the client server network, selecting which server to access based on a load balance list resident on the client computer**). Ballard further teaches where the client computer can upload data to the selected server (**see Ballard column 7, lines 58-64**).

40. It would be obvious to one skilled in the art to use multiple computers to calculate augmentation data, as taught by applicant's description of the existing EGNOS technology, in the augmentation system taught by Crosby, as modified by Murphy and Lo in claim 8, because multiple computers would increase overall system reliability in the event of equipment failure. If redundant computers are implemented it would further be obvious for the server to retransmit the augmentation data to the plurality of computers with the predetermined time delay.

41. It would be obvious to one skilled in the art to include the load balancing scheme taught in Ballard to the augmentation system taught in Crosby, in view of Murphy and Lo in claim 8, because client side load balancing does not suffer from a single point of failure that can cripple an entire data delivery system (**see Ballard column 2, lines 66-67 and column 3, lines 1-2**).

42. **Regarding claim 10**, Crosby, as modified by Murphy and Lo in claim 8 and further modified by applicant's admitted prior art and Ballard in claim 9, does not teach where the augmentation data retransmitted to said plurality of computers includes an identifier of said selected computer.

43. The Internet Protocol (IP) is a well known protocol for communications between computers where each packet transmitted from one computer to another contains an identifier of the receiving computer. It would therefore be obvious to include an identifier of the selected computer in the augmentation data retransmitted by the server.

44. **Regarding claim 11**, Crosby, as modified by Murphy and Lo in claim 8 and further modified by applicant's admitted prior art and Ballard in claim 9, teaches where the selection is repeated cyclically on each reception of said augmentation data by said server (**see Ballard figure 6, where if an attempt to connect to a server is unsuccessful, the client selects another server**).

45. Claims 12, 13, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (G. Crosby, W. Ely, K. McPherson, J. Stewart, D. Kraus, T. Cashin, K. Bean, B. Elrod, "A Ground-Based Regional Augmentation System (GRAS) - The Australian Proposal," Presented at ION GPS2000, Salt Lake City, UT, 2000) in view of

Murphy (US 5786773) and Lo et al. (S.C. Lo, D. Akos, S. Houck, P.L. Normark, P. Enge, “WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel,” Presented at the IEEE Position Location and Navigation Symposium, Palm Springs, CA, 2002) and further in view of Ballard (US 6078960).

46. **Regarding claim 12**, Crosby, as modified by Murphy and Lo in claim 8, does not teach where the system comprises at least one active first augmentation data server and one redundant second augmentation data server wherein said computer transmits said augmentation data to said first input of said active server, and does not transmit said augmentation data to said first input of said redundant servers and wherein said computer includes means for inverting the roles of said first and second servers, said second server becoming the active server and said first server becoming the redundant server.

47. Ballard teaches where a client server system may contain more than one server (**see Ballard column 1, lines 14-24 where it is taught that it is common to use multiple servers for load balancing**) and where the client transmits data to an active server and not to the redundant server (**see Ballard column 1, lines 46-50 where each client computer has a load balance list enumerating the addresses of multiple server computers. See also column 7, lines 58-64 where the client establishes a connection with an uplink server selected from the load balance list**) and where the client can switch the active and redundant servers (**see Ballard figure 6 where if an attempt to connect to a server is unsuccessful, the client selects another server**).

48. It would be obvious to one skilled in the art for the augmentation system taught in Crosby, as modified by Murphy and Lo in claim 8, to implement a client server arrangement as taught in Ballard because multiple servers are able to load balance requests from clients, thus allowing response times to be maintained at a desirable speed (**see Ballard column 1, lines 22-24**).

49. **Regarding claim 13**, Crosby, as modified by Murphy and Lo in claim 8 and further modified by Ballard in claim 12, teaches where said means for reversing the roles of said first and second servers is commanded cyclically on each sending of said augmentation data (**see Ballard figure 6 where if an attempt to connect to a server is unsuccessful, the client selects another server**).

50. **Regarding claim 17 (alternate rejection)**, Crosby, as modified by Murphy and Lo in claim 8, does not teach where the system comprises a plurality of augmentation data servers.

51. Ballard teaches where a client server system may contain a plurality of data servers (**see Ballard column 1, lines 14-24 where it is shown that it is common to use multiple servers for load balancing**).

52. It would be obvious to one skilled in the art to modify the augmentation system in Crosby, as modified by Murphy and Lo in claim 8, to include multiple augmentation data servers because multiple servers are able to load balance requests from clients, thus allowing response time to be maintained at a desirable speed (**see Ballard column 1, lines 22-24**).

53. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby et al. (G. Crosby, W. Ely, K. McPherson, J. Stewart, D. Kraus, T. Cashin, K. Bean, B. Elrod, "A Ground-Based Regional Augmentation System (GRAS) - The Australian Proposal," Presented at ION GPS2000, Salt Lake City, UT, 2000) in view of Murphy (US 5786773) and Lo et al. (S.C. Lo, D. Akos, S. Houck, P.L. Normark, P. Enge, "WAAS Performance in the 2001 Alaska Flight Trials of the High Speed Loran Data Channel," Presented at the IEEE Position Location and Navigation Symposium, Palm Springs, CA, 2002) and further in view of Applicant's admitted prior art.

54. **Regarding claim 16**, Crosby, as modified by Murphy and Lo in claim 8, teaches where the system comprises routing and broadcasting means (**see Crosby figure 1 showing where the GRAS Reference Station transmit to the GRAS Master Station over Satcom or terrestrial links**), said augmentation data being determined from data transmitted by a plurality of receiver stations and then routed and broadcast to said computer by said routing and broadcasting means (**see Crosby figure 1**)

55. However, Crosby, as modified by Murphy and Lo in claim 8, does not teach where the augmentation data retransmitted by said server is also routed and broadcast to said computer by said routing and broadcasting means used to transmit the data from the receiver stations to the computer.

56. Applicant's admitted prior art teaches where the augmentation data may be routed and broadcast to the computer using the same routing and broadcasting means used to transmit the data from the receiver stations to the computer (**see specification page 2, lines 24-34 where the retransmission path for the augmentation data in**

the EGNOS system comprises, in part, the same routing and broadcasting means used by the reference stations to transmit the data to the CPF).

57. It would be obvious to one skilled in the art to modify Crosby, in view of Murphy and Lo in claim 8, so that the retransmission path uses the same routing and broadcasting means used to transmit data from the receiver stations to the computer, as taught in Applicant's admitted prior art, because this eliminates the need for additional equipment to accomplish the feedback loop.

Conclusion

Any inquiry concerning this or any earlier communication from the examiner should be directed to Examiner Peter Nolan, whose telephone number is 571-270-7016. The examiner can normally be reached Monday-Friday from 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black, can be reached at 571-272-6956. The fax number for the organization to which this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D Nolan/

Examiner, Art Unit 3661

4/6/2009

/Thomas G. Black/

Supervisory Patent Examiner, Art Unit 3661